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1985

ILLINOIS COMMERCIAL SPRAY SCHEDULE

Apples, Peaches, Nectarines, Apricots, Plums, Pears, and Cherries

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SUPPLEMENT TO CIRCULAR 1151

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

COLLEGE OF AGRICULTURE

IN COOPERATION WITH ILLINOIS NATURAL HISTORY SURVEY

Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. WILLIAM R. OSCHWALD, Director, Cooperative Extension Service, University of Illinois at Urbana-Champaign. The Illinois Cooperative Extension Service provides equal opportunities in programs and employment.

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COOPERATIVE EXTENSION SERVICE

APPLES

MATERIALS, RATE PER
100 GALLONS OF WATER
FOR DILUTE SPRAYS

APPLICATION AND PURPOSE

SPECIAL SUGGESTIONS

DORMANT TO GREEN TIP Scale insects, aphids, and red mites

SUPERIOR OIL, 2 gal.

DIFOLATAN 4F, 3 qt. or 5 qt.

Thorough coverage is the most important factor. Varieties susceptible to powdery mildew should be sprayed in dormancy so that a mildewcide can be used in $\frac{1}{2}$ -inch stage.

Application at the 5-qt. rate during silver tip but before $\frac{1}{4}$ -inch green should control scab until calyx (or about 6 weeks, depending on rainfall). Difolatan will not control mildew or the rust diseases; therefore, these diseases on susceptible varieties will need additional control measures beginning at pink bud. On these cultivars the 3-qt. rate or an alternate fungicide (see green tip) is suggested. Application later than $\frac{1}{4}$ -inch green tip will produce severe leaf injury.

Mostly for varieties susceptible to fire blight. Use the copper sulfate during dormancy; the bordeaux-oil is best at silver tip. Difolatan and bordeaux are compatible with superior oil at this time of year. Do not apply oil after a Difolatan spray.

GREEN TIP THROUGH TIGHT CLUSTER

Aphids

Systemic phosphate insecticide
— plus —

DODINE 65W (Cyprex), $\frac{3}{8}$ to $\frac{1}{2}$ lb.

— or —

DODINE 65W (Cyprex), $\frac{1}{4}$ lb., and
Microfine wettable SULFUR, 5 lb.

— or —

DIKAR, 2 lb., and
TRITON B1956, 3 oz.

— or —

BENOMYL 50W (Benlate), 2 to 3 oz., or
THIOPHANATE-METHYL 70W
(Topsin M), 2 to 3 oz.,
and
CAPTAN 50W, 1 lb.

— or —

TRIFORINE 18EC (Funginex), 1 pt.

Wetting agents increase the effectiveness of Dikar against powdery mildew.

Pests tolerant to currently used pesticides are appearing. Therefore we recommend alternating pesticides during the spray program and using labelled pesticide mixes. On varieties susceptible to powdery mildew use Dikar, benomyl-captan, or include sulfur with dicline. It is important to provide trees with protective fungicides at 7- to 10-day intervals throughout this period. Scab and mildew control must begin at green tip.

Use triforine for "kick-back" action up to 96 hours after a scab infection period.

PINK BUD

Scab, powdery mildew, cedar-apple rust

DIKAR, 2 lb., and
TRITON B1956, 3 oz.

— or —

BENOMYL 50W (Benlate), 2 to 3 oz., or
THIOPHANATE-METHYL 70W
(Topsin M), 2 to 3 oz.,
and
MANCOZEB 80W, 12 oz., or
POLYRAM 80W, 12 oz.

— or —

DODINE 65W (Cyprex), $\frac{1}{4}$ lb., and
Microfine wettable SULFUR, 5 lb., and
a rust fungicide

— or —

BAYLETON 50W, 1 oz.

If the 3-qt. rate of Difolatan was used, now is the time to apply additional scab sprays.

Rust control must start in this spray. Mancozeb (Manzate 200, Dithane M-45), Polyram, zincib, and ferbam are all good rust fungicides. Ferbam may affect fruit finish of Golden Delicious if used after calyx.

Bayleton, a new product, is very effective against rust diseases and powdery mildew but weak against scab. If scab is a problem, combine Bayleton with a good scab fungicide.

PINK BUD (continued)

Curculio, leaf roller **AZINPHOSMETHYL 50W (Guthion),**
 $\frac{5}{8}$ lb.

For fertilizing

EARLY BLOOM

Fire blight **STREPTOMYCIN, 50 or 100 ppm**

Only necessary if curculio or leaf roller is severe or if other chewing insects are present. If fruit dimpling caused by tarnished plant bug is a problem, use a carbamate insecticide such as methomyl or Sevin. Pydrin or permethrin is effective in the pink bud stage. The control of white apple leaf hoppers and leaf miners is most effective at petal-fall.

This prevents a deficiency of boron, which affects pollen germination. If ground applications of boron are made, eliminate foliar application. See Circular 1151.

SCAB, POWDERY MILDEW, AND

CEDAR-APPLE RUST

Scab, powdery mildew, and
cedar-apple rust

On susceptible varieties start streptomycin at pink. Continue at 3-day intervals through bloom. Above 65° F. use 50 ppm; below 65° F., or when mixed with fungicides, use 100 ppm. Streptomycin uptake is enhanced by applying it as a dilute spray and by using spreader activators, such as glyodin, Regulaid, or glycerin, at 1 to 2 pints per 100 gal. Resistance to streptomycin is suspected in southwestern Illinois. Spray at recommended rates until petal-fall.

Fungicide applications are not recommended at full bloom as many injure pollen and may interfere with fruit set. During prolonged bloom, however, scab, mildew, and cedar-apple rust must be controlled. When simultaneous application of a fungicide and streptomycin is necessary, benomyl, benomyl, captan, or glyodin should be used. Rust diseases have been extremely severe for the past few years. Maintain a strict schedule from pink bud to third cover.

CALYX AND FIRST COVER

Coddling moth, leaf roller,
curculio, aphids

Scab, cedar-apple rust,
blotch, powdery mildew,
frog-eye, quince rust

PHOSMET 50W (Imidan), 1½ lb., or
AZINPHOSMETHYL 50W (Guthion),
 $\frac{5}{8}$ lb.
— plus either —
POLYRAM 80W, 2 lb.
— or —
DIKAR, 2 lb., and
TRITON B1956, 3 oz.
— or —

BENOMYL 50W (Benlate), 2 or 3 oz.,
and
MANCOZEB 80W, 12 oz., or
POLYRAM 80W, 12 oz.
STREPTOMYCIN, 100 ppm

See Circular 1151.

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Control blight in secondary bloom on susceptible varieties. The use of streptomycin after bloom for twig blight control is of limited value and is not recommended.

Summer varieties are best thinned at petal-fall. Fall and winter varieties are best thinned according to fruit size, preferably when king fruit is 10 to 11 millimeters in diameter.

Add to the calyx spray if there is no ground application of boron. See Circular 1151. Use as needed in the first and third cover sprays. Do not use on Golden Delicious.

SOLUBOR, 1 lb.
UREA (45 percent N), 2 to 5 lb.

For fertilizing

COVER SPRAYS (remainder of the season)

| | |
|----------------------------------|--|
| All insects, diseases, and mites | AZINPHOSMETHYL 50W (Guthion), $\frac{5}{8}$ lb. — plus either — POLYRAM 80W, 1½ lb. — or — DIKAR, 2 lb., and TRITON B1956, 3 oz. — or — BENOMYL 50W (Benlate), 2 oz., and CAPTAN 50W, 1 lb. — or — CAPTAN 50W, 1 lb., and ZINEB 75W, 1 lb. CALCIUM CHLORIDE, 2 lb. or 3 lb. |
|----------------------------------|--|

GROWTH REGULATOR SPRAYS

| | |
|---|---|
| To increase "typeness" of Red Delicious | PROMOLIN, 1-1½ pt. |
| To increase red color of Jonathan, McIntosh | ALAR, 1 lb. and PROMOLIN, 1 pt. |
| To delay harvest, increase firmness and color | ALAR, 1 lb. |
| To advance harvest | ETHREL, 1 pint, and NAA, 10 ppm, and 2,4,5-TP, 10 ppm |

See Circular 1151.

PEACHES, NECTARINES, APRICOTS

DORMANT

Scale insects, red mites, leaf curl

| | |
|--|--------|
| SUPERIOR OIL, 2 gal., and 6-6-100 BORDEAUX | — or — |
| FERBAM 76W, 2 lb. | — or — |
| BRAVO 500, 1½-2 pt. | |

PINK BUD

Tarnished plant bug, curculio, oriental fruit moth

| |
|--|
| AZINPHOSMETHYL 50W (Guthion), $\frac{5}{8}$ lb., or CARBARYL 50W (Sevin), 2 lb., or METHOMYL L (Lannate, Nudrin), 1½ pt. |
|--|

PINK BUD
Must not be applied when any blossoms are open, as this will kill honey bees. Azinphosmethyl is best for curculio. Pydrin or permethrin is good for control of tarnished plant bug and stink bug.

COVER SPRAYS (remainder of the season)
As needed at 10- to 14-day intervals after the first cover. Alternate phosphate insecticides are phosmet (Imidan), phosalone (Zalone), malathion, parathion, or diazinon. Parathion and diazinon are outstanding for San Jose scale and spotted tentiform leaf miner. Red mites may need suppression through this period. Northern Illinois growers should be aware of apple maggot in late August. If cicadas are laying eggs, spray with carbaryl 50W, 2 lb. per 100 gal. water, every 7 days. Also use carbaryl for young grasshoppers in or near young orchards.

Rust and powdery mildew control should continue through third cover. Folpet (Phaltan), 1½ to 2 lb. per 100 gal., should start at fifth cover if *Botryosphaeria* is serious.

On Jonathan and Red Delicious add 2 lb. calcium chloride per 100 gal. in the third, fourth, and fifth cover sprays, 3 lb. in later sprays. Limit applications of calcium chloride on Golden Delicious to a trial basis. For low-volume sprays apply 4 lb. per acre in the third, fourth, and fifth cover sprays and 6 lb. per acre in later sprays. Add the calcium chloride last when preparing sprays. See Circular 1151.

GROWTH REGULATOR SPRAYS

Apply 100 gal. of solution per acre when the kings are in full bloom or split the application, making one application at half rate when the kings are in full bloom plus another at half rate at petal-fall. The split application is preferred.

Apply 100 gal. of solution per acre 60 to 85 days before normal harvest date.

Apply 60 to 85 days before normal ripening date to McIntosh, Jonathan, and later varieties.

Apply one to two weeks before desired harvest date to Jonathan and spur-type Red Delicious. Apply as a dilute spray with thorough coverage. Stop-drop materials must be applied with Ethrel. Works well on apples previously treated with Alar.

Alar applied to delay harvest acts as a stop-drop preventative. NAA and 2,4,5-TP may be applied when apples start to drop.

MATERIALS, RATE PER
100 GALLONS OF WATER
FOR DILUTE SPRAYS

APPLICATION AND PURPOSE

SPECIAL SUGGESTIONS

EARLY TO FULL BLOOM

Brown rot blossom blight

BENOMYL 50W (Benlate), 4 oz., or
THIOPHANATE-METHYL 70W (Topsin
M), 4 oz., plus
CAPTAN 50W, 1 lb.

— or —

Microfine wettable SULFUR, 3 lb., and
DICHLONE 50W (Phygon), $\frac{1}{4}$ lb.
— or —
FUNGINEX 18EC, $\frac{3}{4}$ -1 pt.

Try to make two applications, one in early bloom and one in full bloom. Do not use insecticides after first blossoms open. Thiophanate-methyl 70W (Topsin M) is a relatively new fungicide in Illinois. Its spectrum of activity is identical to that of benomyl and it therefore should be used with the same precautions as benomyl (see below).

Fungi tolerant to currently used fungicides (benomyl and thiophanate-methyl) are appearing. We therefore recommend alternating fungicides in the spray program and using suggested fungicide mixes. Never use benomyl or thiophanate-methyl alone or in combination with each other. Always combine them with protectant fungicides.

PETAL-FALL THROUGH COVER SPRAYS

Curculio, oriental fruit moth,
stink bugs, red-banded leaf
roller, and cattacing insects
Brown rot and peach scab

AZINPHOSMETHYL 50W (Guthion),
 $\frac{5}{8}$ lb., or
PHOSMET 50W (Imidan), $1\frac{1}{2}$ lb.
— plus —

Microfine wettable SULFUR, 6 lb.
— or —
BRAVO 4F, $1\frac{1}{2}$ -2 pt.

MYCOSHIELD 17W, 150 ppm
CAPTAN 50W, 1 lb., and
DODINE 65W (Cyprex), $\frac{1}{2}$ lb.
ALAR, $1\frac{1}{2}$ -2 lb.

Bacterial spot

To advance harvest

Try to advance harvest

Parathion and diazinon are alternative insecticides and are especially effective against San Jose scale. For terrapin scale control, either add Systox to the regular spray when needed or use diazinon.

Where peach scab has been a problem, use sulfur, benomyl, thiophanate-methyl, or Bravo (chlorothalonil). Discontinue using Bravo at shuck-split, and substitute another scab control fungicide until 40 days before harvest.

A complete application is needed about every 14 days through this period. Normally, insecticides are not used after the first 2nd-bloom curculio spray. Watch harvest restrictions. See borer control section.

Mycoshield (oxytetracycline) should be applied on a strict 7-day schedule beginning at shuck-split and continuing until 3 weeks before harvest.

When warm, rainy weather prevails during early to mid-summer, bacterial spot may become serious. The combination of captan and dodine added to the cover sprays may help alleviate the problem.

Apply as a dilute spray with full coverage just before pit hardening, when the peaches loosen and can be mechanically thinned. Alar advances harvest 3 to 5 days and promotes uniform ripening.

PREHARVEST AND POSTHARVEST FUNGICIDES

Brown rot

BENOMYL 50W (Benlate), 4 oz., or
THIOPHANATE-METHYL 70W (Topsin
M), 8 oz., plus
CAPTAN 50W, 1 lb.
— or —
TRIFORINE 18EC (Funginex), $\frac{3}{4}$ -1 pt.

Do not use more than three applications of Funginex to control fruit rot.

Botran is specific for *Rhizopus* rot and is best added to the hydrocooler water as a postharvest dip.

Rhizopus rot

MATERIALS, RATE PER
100 GALLONS OF WATER
FOR DILUTE SPRAYS

APPLICATION AND PURPOSE

SPECIAL SUGGESTIONS

BORER CONTROL

Peach borer, lesser peach borer, American plum borer

ENDOSULFAN 50W (Thiodan) 1 1/2 lb., or
AZINPHOSMETHYL 50W (Guthion),
5/8 lb., or
CHLORPYRIFOS 4E (Lorsban), 1 1/2-2 pt.

Make two to four applications but adhere to harvest restrictions on the different varieties. July and August are the critical months. Thorough coverage of all wounds and gummy areas of all major branches is essential. This spray must be applied with a hand gun instead of the mist-blower type sprayer. Chlorpyrifos (Lorsban) should be applied to peach tree trunks up to scaffold limbs.

PLUMS

DELAYED DORMANT

Scale insects, red mites, black knot

SUPERIOR OIL, 2 gal.

Apply before buds begin to open. The oil controls scale and mites. Prune out and burn all black knots during the dormant period.

PETAL-FALL THROUGH SECOND COVER

Curculio, brown rot
5/8 lb.
— plus —

BENOMYL 50W (Benlate), 4 oz., plus
CAPTAN 50W, 1 lb.
— or —
CAPTAN 50W, 2 lb.

Apply a spray every 10 to 14 days for three times, starting at petal-fall. Add a miticide if needed. For borer control follow the suggestions given under peaches. Alternate fungicides during the spray program.

Dichlone (Phygon, Quintar) will provide excellent control of brown rot blossom blight. Thiophanate-methyl 70W (Topsin M) can be substituted for the benomyl but should be used in combination with captan or dichlone.

ADDITIONAL COVERS

Brown rot

BENOMYL 50W (Benlate), 4 oz., plus
CAPTAN 50W, 1 lb.
— or —
CAPTAN 50W, 2 lb.

Start these sprays about 3 weeks before harvest and apply about every 7 days. Alternate fungicides during the spray program.

PEARS

DELAYED DORMANT

Pear psylla, scale insects, leaf spot

SUPERIOR OIL, 2 gal., and
FERBAN 76W, 2 lb.

Apply just before buds begin to open.

BLOOM

Fire blight
Three sprays 3 days apart, starting with the first blossoms. May be applied during the day for effective control. Be sure to continue on late blossoms. See early bloom section under apples.

STREPTOMYCIN, 100 ppm

APPLICATION AND PURPOSE

MATERIALS, RATE PER
100 GALLONS OF WATER
FOR DILUTE SPRAYS

CALYX THROUGH COVER SPRAYS

Codling moth, curculio, leaf spot, scab
Azinphosmethyl 50W (Guthion), $\frac{5}{8}$ lb.
— plus either —
Captan 50W, 1 $\frac{1}{2}$ lb., or
Ferbam 76W, 1 $\frac{1}{2}$ lb.

SPECIAL SUGGESTIONS

Start calyx spray as soon as the petals have fallen and continue at 12- to 14-day intervals for at least 3 covers. Later, apply azinphosmethyl alone if psylla nymphs are visible on water sprouts.

CHERRIES**DORMANT**
Scale insects

SUPERIOR OIL, 2 gal.

Apply before the buds open.

FIRST AND SECOND COVER SPRAYS

Brown rot, cherry leaf spot,
curculio, slugs
Azinphosmethyl 50W (Guthion), $\frac{5}{8}$ lb.
— plus either —
Captan 50W, 2 lb.
— or —
WETTABLE SULFUR, 6 lb.
— or —
Dichrone 50W, $\frac{1}{2}$ lb.

ADDITIONAL SPRAYS

Cherry leaf spot

DODINE 65W (Cyprex), $\frac{1}{2}$ lb., or
Captan 50W, 2 lb.

Apply immediately after harvest. One or two sprays should be adequate. Spray more if there is evidence of leaf spot.

A phosphate insecticide may be needed if insects attack leaves. Borers should be controlled as suggested for peaches.

See the section on peaches, nectarines, and apricots for suggested borer sprays.

MITE CONTROL: It is important to avoid using insecticides that are toxic to predatory mites. If phosphate insecticides will kill plant-feeding mites, they will also kill predatory mites. Miticides, however, may be more selective, and the following miticides can be used without killing predatory mites: DICOFOL (Keithane), OMITE, OVEX, PLICTRAN, TERADIFON (Tediom), and VENDEX. The miticide OXYMAL (Vydate) will kill all mites. Some fungicides, such as DIKAR and DINOCAP (Karathane), give mite suppression and allow good predatory mite survival. BENOMYL (Benlate) suppresses both types of mites. Where red mites have been a problem, use oil in the dormant spray.

RESTRICTIONS ON PESTICIDES USED ON TREE FRUITS: The following restrictions are those in effect as of December 1, 1984. Growers are urged to follow directions on the manufacturer's current label at all times. When mixing several pesticides in the same tank, use the time restriction with the longest interval.

| Pesticide | Number of days between last application and harvest | | | | | | Number of days between last application and harvest | | | | | |
|--|---|-------|----------|---------|-------|---------------------------------------|---|-------|----------|---------|-------|-------|
| | Apples | Pears | Cherries | Peaches | Plums | Pesticide | Apples | Pears | Cherries | Peaches | Plums | Plums |
| Ambush, Pounce (permethrin) ... | J | 14D | ... | 7 | ... | Mesurol..... | ... | 7D | 21E | ... | ... | ... |
| Bayleton | 0 | ... | 0 | ... | 0 | Mycoshield (oxytetracycline) | ... | 7D | 21 | ... | 14C | 28C |
| Bonlate (benomyl) | 0 | 0 | 0 | 0 | 0 | Omite | ... | ... | 7 | ... | 7 | ... |
| Bordeaux..... | 0 | 0 | 0 | 0 | 0 | Ovex | ... | ... | 14 | 14 | 14 | 14 |
| Boiran | ... | ... | 1H | 1H | 8 | Parathion | 14 | 14 | 14 | 14 | 14 | 14 |
| Bravo | ... | ... | K | K | 0 | Phaltan (folpet) | 0 | ... | ... | ... | ... | ... |
| Captan | 0 | 0 | 0 | 0 | 0 | Phosphamidon | 30 | ... | ... | ... | ... | ... |
| Copper sulfate | 0 | 0 | 0 | 0 | 0 | Phygen (dichlone) | 1 | 3 | 7 | 7 | 7 | 3 |
| Cyrex | 7 | 7 | 0 | 15 | ... | Plictran | 14E | ... | ... | ... | E | E |
| Diathion..... | 14 | 14 | 10 | 20 | 10 | Polyram | 30 | ... | ... | ... | ... | ... |
| Difolatan..... | A | A | ... | ... | ... | Pydrin | 21F | A | ... | ... | 14G | ... |
| Dikar | 30 | 21 | ... | ... | ... | Quintar (dichlone) | 1 | ... | B | 7 | 7 | ... |
| Dithane M-45 (mancozeb) | 30 | 21 | ... | ... | ... | Sevin | 1 | 1 | 1 | 1 | 1 | 1 |
| Forbam | 7 | 7 | 0 | 21 | 7 | Streptomycin | 50 | ... | ... | ... | 0 | 0 |
| Funginex (triforine) | J | ... | 0 | 0 | ... | Sulfur | 0 | 0 | 0 | 0 | 0 | 0 |
| Glyodin | 0 | 0 | 0 | 7 | ... | Systox | 21 | 21 | ... | 30 | 30 | 30 |
| Guthion (azinphosmethyl) | 15 | 15 | 15 | 15 | 15 | Tedion | 0E | 0E | 0C | 0C | 0C | 0C |
| Imidan | 7 | 7 | 7 | 14 | 7 | Thiodan | ... | ... | ... | 30C | 30C | 7C |
| Karathane | 21 | 21 | ... | 45 | ... | Thiram (thylate) | 0 | ... | ... | 7 | 7 | ... |
| Kelthane | 7 | 7 | 7 | 14 | 7 | Topsin M | ... | ... | ... | ... | ... | ... |
| Lannate, Nutridrin (methomyl) | 8 | ... | ... | 4 | 0 | (thiophonate-methyl) | 0 | ... | 1 | 1 | 1 | 1 |
| Lime sulfur | 0 | 0 | 0 | 0 | 0 | Triticon | 30 | 30 | ... | ... | ... | ... |
| Lorsban | 28 | A | ... | 14 | A | Vendex | 14D | 14D | ... | ... | ... | ... |
| Malathion | 3 | 3 | 3 | 7 | 3 | Ydate | 14 | 14 | ... | ... | ... | ... |
| Manzate 200 (mancozeb) | 30 | 15 | ... | ... | ... | Zineb | 30 | 30 | 7 | 7 | 7 | 30 |

... Not recommended.

D. Not more than 3 applications to fruit.

E. Not more than 4 applications to fruit.

F. Do not apply when fruit is present — apply prebloom or postharvest.

G. Not more than 2 applications to fruit.

H. Can be used as a fruit dip.
I. Do not apply after petal-fall.
K. Do not apply after shuck-split.

L. Not more than 2.1 lb. active ingredient per acre per season.

M. Not more than 1.5 lb. active ingredient per acre per season.



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